

**CPC****COOPERATIVE PATENT CLASSIFICATION****A01F**

**PROCESSING OF HARVESTED PRODUCE; HAY OR STRAW PRESSES; DEVICES FOR STORING AGRICULTURAL OR HORTICULTURAL PRODUCE** (devices for topping or skinning onions or flower bulbs [A23N 15/08](#))

**A01F 1/00**

**Stationary apparatus or hand tools for forming or binding straw, hay or the like into bundles** (baling apparatus or presses [A01F 13/00](#), [A01F 15/00](#); mobile binders for use in the field [A01D 37/00](#), [A01D 39/00](#))

**A01F 1/02**

- . Hand-operated tools

**A01F 1/04**

- . Fastening or tying devices

**A01F 1/06**

- . Ties for bundles

**A01F 3/00**

**Hand-operated implements for cutting-up straw, hay or the like** (mechanically-driven straw cutters [A01F 29/00](#); cutting in general [B26](#))

**Threshing****A01F 5/00**

**Hand-operated implements for threshing**

**A01F 7/00**

**Threshing apparatus**

**A01F 7/02**

- . with rotating tools (threshing cylinders or concaves [A01F 12/18](#))

**A01F 7/04**

- . . with axles transverse to the feeding direction

**A01F 7/06**

- . . with axles in line with the feeding direction; { Axial threshing machines}

**A01F 7/062**

- . . . { with a rotating cage}

**A01F 7/065**

- . . . { with cage sweep mechanisms}

**A01F 7/067**

- . . . { with material-flow influencing means}

**A01F 7/70**

- . with flails

**A01F 11/00**

**Threshing apparatus specially adapted for maize; Threshing apparatus specially adapted for particular crops other than cereals**

**A01F 11/02**

- . for flax

**A01F 11/04**

- . for clover or like seeds, e.g. lucerne

- A01F 11/06 . for maize, e.g. removing kernels from cobs
- A01F 11/08 . for palm fruit, e.g. releasing the fruit from the stalk
- A01F 12/00** **Parts or details of threshing apparatus** (devices, other than safety devices for feeders, for protecting human beings [A01D 75/20](#), [A01F 21/00](#))
  - A01F 12/10 . Feeders
  - A01F 12/12 .. without band-cutters
  - A01F 12/14 .. with band-cutters
  - A01F 12/16 .. Safety devices
  - A01F 12/18 . Threshing devices
    - A01F 12/181 .. {Adjustable threshing mechanisms}
    - A01F 12/182 .. {Stripper beaters after the threshing drum}
    - A01F 12/184 .. {Cleaning means}
    - A01F 12/185 .. {Mounting means}
    - A01F 12/187 .. {Vibratory threshing mechanisms}
    - A01F 12/20 .. Threshing cylinders with ribs
    - A01F 12/22 .. Threshing cylinders with teeth
    - A01F 12/24 .. One-part threshing concaves
    - A01F 12/26 .. Multi-part threshing concaves
    - A01F 12/28 .. Devices for adjusting the concaves
  - A01F 12/30 . Straw separators {, i.e. straw walkers, for separating residual grain from the straw (grain cleaning [A01F 12/44](#))}
    - A01F 12/305 .. {combined with additional grain extracting means}
    - A01F 12/32 .. with shaker screens or sieves
    - A01F 12/34 ... Sieve elements; Linings for shakers
    - A01F 12/36 .... Sieve elements specially adapted for handling short straw
    - A01F 12/38 .. with juxtaposed and independently-moved shaker bars or the like
    - A01F 12/385 .. with endless straw-conveying surface
    - A01F 12/39 .. with straw carriers in the form of rotors or drums
    - A01F 12/395 .. Conical or cylindrical straw separators with internal working surface
  - A01F 12/40 . Arrangements of straw crushers or cutters
  - A01F 12/42 . Apparatus for removing awns from the grain
  - A01F 12/44 . Grain cleaners; Grain separators
    - A01F 12/442 .. {Rotary cleaners}
    - A01F 12/444 .. {Fanning means}
    - A01F 12/446 .. {Sieving means}
    - A01F 12/448 ... {Sieve adjusting means}

- A01F 12/46 . Mechanical grain conveyers
- A01F 12/48 . Air conduits or blowers for grain
- A01F 12/50 . Sack-filling devices; Counting or weighing devices
- A01F 12/52 . Arrangements for returning unthreshed grain to the threshing device
- A01F 12/54 . Arrangements for collecting or removing dust
- A01F 12/56 . Driving mechanisms for the threshing parts
- A01F 12/58 . Control devices; Brakes; Bearings
- A01F 12/60 . Grain tanks {(for combines [A01D 41/1208](#))}

**Baling straw or the like** (baling presses in general, briquetting presses B30B)

**A01F 13/00 Hand-operated baling apparatus**

**A01F 15/00 Baling presses for straw, hay or the like** { making compressed stacks [A01D 85/00](#)}

- A01F 15/005 . {for conditioning bales, e.g. rebaling}
- A01F 15/02 . with press-boxes {([A01F 15/046](#) takes precedence)}
- A01F 15/04 . Plunger presses
- A01F 15/042 .. {Plungers}
- A01F 15/044 .. {with open pressing chambers}
- A01F 15/046 .. {with press-boxes}
- A01F 15/06 .. with double-action plunger
- A01F 15/07 . Rotobalers, i.e. machines for forming cylindrical bales by winding and pressing
- A01F 15/0705 .. {Arrangements for continuous operation}
- A01F 15/071 .. {Wrapping devices (tying devices [A01F 15/141](#))}
- A01F 15/0715 ... {Wrapping the bale in the press chamber before opening said chamber}
- A01F 15/0765 .. {Rolling bales on the ground}
- A01F 15/08 . Details
- A01F 15/0816 .. {Devices for dispensing chemicals in bales during formation}
- A01F 15/0825 .. {Regulating or controlling density or shape of the bale}
- A01F 15/0833 ... {for round balers}
- A01F 15/0841 .. {Drives for balers}
- A01F 15/085 ... {for round balers}
- A01F 15/0858 ... {for the tying devices or needles}

- A01F 15/0875      ..      {Discharge devices}
- A01F 15/0883      ...      {for round balers}
- A01F 15/10      ..      Feeding devices for the crop material, {e.g. precompression devices (pick-ups [A01D 89/00](#))}
- A01F 15/101      ...      {Feeding at right angles to the compression stroke ([A01F 15/106](#) takes precedence)}
- A01F 15/106      ...      {for round balers}
- A01F 15/12      ..      Feeding devices for the ties
- A01F 15/14      ..      Tying devices specially adapted for baling presses { independent binders [A01D 39/00](#)}
- A01F 15/141      ...      {for round balers (wrapping devices [A01F 15/071](#))}
- A01F 15/145      ...      {Twine knotters}
- A01F 15/146      ...      {Wire twisters}
- A01F 15/148      ...      {Monitoring the tying, e.g. mistie detectors}
- A01F 15/16      ..      Division blocks
- A01F 15/18      ..      Endless belts, rolls or the like

**Accessories for threshing machines or baling presses** (loaders for sheaves, stacks or bales [A01D 87/12](#); trailers [B62D 63/06](#))

#### **A01F 17/00      Straw conveyers for threshing machines or baling presses**

- A01F 17/02      .      Mechanical conveyers
- A01F 17/04      .      Pneumatic conveyers

#### **A01F 19/00      Devices for securing threshing machines or baling presses to the ground, e.g. for compensating for unevenness of the ground**

#### **A01F 21/00      Devices for protecting human beings for threshing machines or baling presses (in combines [A01D 75/20](#); for feeders for threshing apparatus [A01F 12/16](#))**

#### **A01F 25/00      Storing agricultural or horticultural produce; Hanging-up harvested fruit (maturing fruit [A23N 15/06](#); arrangements in barns for preparatory treatment of tobacco [A24B 1/02](#); packing or storing hops [C12C 3/04](#))**

- A01F 25/02      .      Clamps; Pits
- A01F 25/04      .      Stacks, ricks or the like
- A01F 25/045      ..      {Distributing arrangements in haystacks}
- A01F 25/08      ..      Ventilating means
- A01F 25/10      ..      Shelters; {Open sheds or similar structures}
- A01F 25/12      .      Racks for drying purposes
- A01F 25/125      ..      {Transport devices for hay racks}

- A01F 25/13 . Coverings ([A01F 25/14](#) takes precedence)
- A01F 25/14 . Containers specially adapted for storing
- A01F 25/16 . Arrangements in forage silos
- A01F 25/163 .. {in tower silos}
- A01F 25/166 .. {in trench silos}
- A01F 25/18 .. Loading or distributing arrangements
- A01F 25/183 ... {Loading arrangements}
- A01F 25/186 ... {Distributing arrangements (for haystacks [A01F 25/045](#))}
- A01F 25/20 .. Unloading arrangements
- A01F 25/2009 ... {Top unloading units for tower silos}
- A01F 25/2018 ... {Bottom unloading units for tower silos}
- A01F 25/2027 ... {for trench silos}
- A01F 25/2036 .... {Cutting or handling arrangements for silage blocks}
- A01F 25/22 .. Ventilating arrangements
- A01F 29/00** **Cutting apparatus specially adapted for cutting hay, straw or the like (mowers combined with means for cutting up the mown crop [A01D 43/08](#))**
- A01F 29/005 . {for disintegrating and cutting up bales of hay, straw or fodder (for unrolling round bales [A01D 87/127](#))}
- A01F 29/01 . specially adapted for being mounted on or drawn by a tractor, e.g. field choppers
- A01F 29/02 . having rotating knives with their cutting edges in a plane perpendicular to their rotational axis
- A01F 29/025 .. {with feeding direction parallel to axis}
- A01F 29/04 .. with feeding direction transverse to axis
- A01F 29/06 . having rotating knives with their cutting edges on a cylinder surface, e.g. of the helical-type
- A01F 29/08 . having reciprocating knives
- A01F 29/09 . Details
- A01F 29/095 .. { Mounting or adjusting of knives}
- A01F 29/10 .. Feeding devices
- A01F 29/12 .. Discharge means (loaders for hay or like field crop having blowers [A01D 87/10](#))
- A01F 29/14 .. Drives
- A01F 29/16 .. Safety devices, e.g. emergency brake arrangements
- A01F 29/18 ... for protecting human beings
- A01F 29/22 .. Arrangement of knife sharpening devices

<b>A01F 2009/00</b>	<b>Threshing machines with flails; Threshing devices with flails for combines</b>
<b>A01F 2012/00</b>	<b>Parts or details of threshing apparatus</b> (devices, other than safety devices for feeders, for protecting human beings <a href="#">A01D 75/20</a> , <a href="#">A01F 21/00</a> )
A01F 2012/18	. Threshing devices
<a href="#">A01F 2012/188</a>	.. Rethreshing devices
<b>A01F 2015/00</b>	<b>Baling presses for straw, hay or the like</b> { making compressed stacks <a href="#">A01D 85/00</a> }
A01F 2015/04	. Plunger presses
<a href="#">A01F 2015/048</a>	.. Anti-return systems for the material in the pressing chamber when the plunger moves backwards
A01F 2015/07	. Rotobalers, i.e. machines for forming cylindrical bales by winding and pressing
A01F 2015/071	.. {Wrapping devices (tying devices <a href="#">A01F 15/141</a> )}
A01F 2015/0715	... {Wrapping the bale in the press chamber before opening said chamber}
<a href="#">A01F 2015/072</a>	.... Braking means for the film roll in balers which wrap the bale before opening the pressing chamber in order to stretch the film while wrapping.
<a href="#">A01F 2015/0725</a>	... Film dispensers for film rollers in a satellite type wrapper, e.g. holding and tensioning means for the film roller (the rotating arm itself <a href="#">A01F 2015/073</a> )
<a href="#">A01F 2015/073</a>	... Features related to the horizontal rotating arm of a wrapping device of the satellite type (features of film dispensers <a href="#">A01F 2015/0725</a> )
<a href="#">A01F 2015/0735</a>	... Combined machines that include a press bale and a wrapping device in a further step, e.g. turning table, not in the same closed pressing chamber
<a href="#">A01F 2015/074</a>	... Mechanisms for discharging a bale from the wrapping machine.
<a href="#">A01F 2015/0745</a>	... Special features of the wrapping material for wrapping the bale.
<a href="#">A01F 2015/075</a>	... Opening the pressing chamber before wrapping, and then wrapping by rotating the bale without displacing it out of the open pressing chamber
<a href="#">A01F 2015/0755</a>	... Configuration of support surfaces which can move in order to rotate a bale around at least one axis while wrapping
<a href="#">A01F 2015/076</a>	... Wrapping device incorporating sensors
<a href="#">A01F 2015/077</a>	.. Pressing chamber formed by belts and rollers.
<a href="#">A01F 2015/0775</a>	.. Pressing chambers with fix volume
<a href="#">A01F 2015/078</a>	.. Pressing chamber formed exclusively by flexible elements, e.g. belts
<a href="#">A01F 2015/0785</a>	.. Latching or locking means for the tailgate of the rotobaler.
<a href="#">A01F 2015/079</a>	.. Sledge for rollers of the pressing chamber.
<a href="#">A01F 2015/0795</a>	.. Pressing chamber with variable volume
A01F 2015/08	. Details
<a href="#">A01F 2015/0808</a>	.. Balers incorporate an inclinometer
A01F 2015/0841	.. {Drives for balers}

A01F 2015/0858	...	{for the tying devices or needles}
A01F 2015/0866	....	Clutching means for the knotting process; Bale length measuring means for triggering the clutching mean
A01F 2015/0875	..	{Discharge devices}
A01F 2015/0891	...	Weighing the finished bale before falling to ground
A01F 2015/10	..	Feeding devices for the crop material, {e.g. precompression devices (pick-ups <a href="#">A01D 89/00</a> )}
A01F 2015/101	...	{Feeding at right angles to the compression stroke ( <a href="#">A01F 15/106</a> takes precedence)}
A01F 2015/102	....	the pressing chamber is fed from the bottom side
A01F 2015/103	....	the pressing chamber is fed from a lateral side
A01F 2015/105	....	the pressing chamber is fed from the top side
A01F 2015/107	...	Means for withdrawing knives, rotor or walls of the feeding chamber in case of plugging or congestion
A01F 2015/108	...	Cutting devices comprising cutter and counter-cutter
A01F 2015/14	..	Tying devices specially adapted for baling presses { independent binders <a href="#">A01D 39/00</a> }
A01F 2015/141	...	{for round balers (wrapping devices <a href="#">A01F 15/071</a> )}
A01F 2015/143	....	Guiding fingers for twines in order to avoid the slippage of twines to the sides of the bale when tying it
A01F 2015/18	..	Endless belts, rolls or the like
A01F 2015/183	...	Constructional details of belts of the press chamber
A01F 2015/186	...	Constructional details of rollers or the bearings of the rollers of the press chamber
<b>A01F 2025/00</b>		<b>Storing agricultural or horticultural produce; Hanging-up harvested fruit (<a href="#">maturing fruit A23N 15/06</a>; <a href="#">arrangements in barns for preparatory treatment of tobacco A24B 1/02</a>; <a href="#">packing or storing hops C12C 3/04</a>)</b>
A01F 2025/14	.	Containers specially adapted for storing
A01F 2025/142	..	Machinery for making sausage-like groups of bales by wrapping or bagging ( <a href="#">for bagging of loose material A01F 2025/145</a> )
A01F 2025/145	..	Bagging machines for loose materials making some kind of "sausage" on the field ( <a href="#">making sausage-like groups of bales A01F 2025/142</a> )
A01F 2025/147	..	the containers are specially adapted for storing or drying the products in vacuum
A01F 2025/16	.	Arrangements in forage silos
A01F 2025/20	..	Unloading arrangements
A01F 2025/2027	...	{for trench silos}
A01F 2025/2045	....	Unloading arrangements including a conveyor belt for transferring the material to a hopper
A01F 2025/2054	....	Machinery for cutting successive parallel layers of material in a trench silo ( <a href="#">for shredding A01F 2025/2063</a> )
A01F 2025/2063	....	Machinery for shredding successive parallel layers of material in a trench silo
A01F 2025/2072	....	Scoops with an extracting tool mounted inside or in the vicinity of said scoop
A01F 2025/2081	....	Hydraulic features of the trench silos unloading devices, e.g. hydraulic circuits

A01F 2025/209

. . . .

Manual portable tools for unloading a silo, e.g. for cutting out a block